



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 375TH AIRLIFT WING (AMC)

EPA Region 5 Records Ctr.



356930

FROM: 375 AW/EM
701 Hangar Road
Scott AFB IL 62225

29 October 1993

SUBJ: Response to Your Review of the Installation Restoration Program's Draft Stage II Remedial Investigation/Feasibility Study and Sampling and Analysis Work Plan for Scott Air Force Base (Your letter, dated 4 June 1993).

TO: United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago IL 60604
ATTN: Laura Ripley

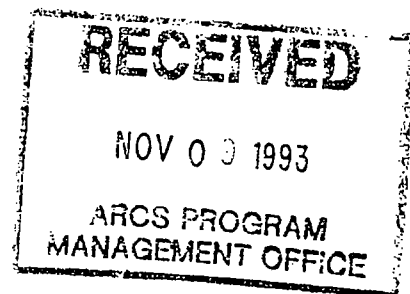
1. In reference to your review of our Installation Restoration Program's Draft Work Plan for the Stage II Remedial Investigation/Feasibility Study (RI/FS), Treatability Study, and the Sampling and Analysis Plan for Scott Air Force Base, Illinois, please find the enclosed (contractor's response comments).

2. The attached response comments have not been reviewed and approved by Scott AFB officials. Prior to the development of the final Stage II RI/FS Work Plan and Sampling and Analysis Plan (SAP), we request your attendance for a meeting here at Scott AFB to discuss the response comments. Please contact Mr. Tim Tedesco, IRP manager, for scheduling a meeting time and date and for any additional questions you may have.

Scott M. Hoversten

SCOTT M. HOVERSTEN, Colonel, USAF
Director, Environmental Management

enclosure





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COMMENT RESPONSES

SUBJECT: WORK PLAN COMMENTS

PROJECT: SCOTT AIR FORCE BASE

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DISCIPLINE: Risk Assessment, Hydrogeology

COMMENTOR:

USEPA, Region V

DATE: 6-4-93

DISCIPLINE: Risk Assessment, Hydrogeology

RESPONDENT:

B. Breeding,
B. Glijer, J. Beaver

DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
	<u>General</u>			
1.			A	Law agrees that interpreting base wide and site specific ground-water flow directions is one of the first tasks to be completed in the Remedial Investigation. Law has reviewed previous contractors site specific potentiometric data in developing the work plans. As Law develops base wide potentiometric data, which has been collected within the same general time frame (i.e., the same day), then we will utilize a geostatistical trend analysis package to assist our hydrogeologist in evaluating site specific and base wide ground-water flow patterns.
2.			D	Law's approach for NAPL investigation is based upon the site historical data including waste disposal practices; constituents known or suspected to be present; and site hydrogeologic conditions. Differences in Law's strategy relates to variations in site history and contaminant characteristics.
3.			A	Hydropunch will be used to screen ground-water data at the sites. Ground-water samples with the highest hits will be sent to laboratory for confirmatory analysis. Level III data, generated with samples submitted for laboratory analysis will be utilized in the risk assessment. The list of analytes for ground-water samples collected by hydropunch method will be appended to the revised SAP.
4.			E	Saturated aquifer conditions occur at Scott AFB in near-surface alluvial and glacial deposits, and in underlying Paleozoic bedrock. Previous field investigations at Scott AFB produced insufficient data to provide for characterization and zonation of water bearing units in and around the base. Therefore, although well designations such as shallow, intermediate, and deep are used to describe the completed depths of monitoring wells on the base, Law anticipates that the ground-water system at Scott AFB consists of an unconfined (water table) aquifer in the upper overburden units, perhaps becom-

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				ing somewhat semi-confined in the underlying discontinuous glacial lenses, and becoming a confined condition at some point within the Pennsylvanian bedrock. It is also anticipated that because no continuous lateral barrier has been identified within the unconsolidated overburden section, the overburden will be considered a single aquifer system. The text will be amended to reflect this comment.
5.			A	Again we emphasize that the unconsolidated interval above bedrock is, at this time, considered a single aquifer system. Wells are planned to be screened above bedrock at sites in which DNAPL contamination is considered possible.
6.			A	Footers will be added to tables that define abbreviations such as data qualifiers.
7.			A	The North arrow is not correct. The figures will be rotated when text is updated.
8.			A	The text will be corrected to indicate that background data presented in Table 2-31 were based on the ERM RI/FS report. ERM relied on site-specific and literature background data for soils and ground water. However, these data are insufficient and additional sampling locations are proposed as indicated in Table 3-9 in the work plan.
9.			D	Law appreciates this comment, however, we believe that this matter could appropriately be deferred to FS. The detailed list of remedial alternatives and ARARs associated with particular alternative will be presented in the FS.
10.			A	Any inconsistencies between text and tables will be corrected in the revised work plan and SAP.
11.			A	A table of acronyms will be included in revised work plan and SAP.

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	<u>Specific</u>			
1.	p. 2-23, 3rd full ¶, last sentence		A.	According to Tim Tedesco, Scott AFB IRP Manager, (see specific comment 5 in AFCEE comments) there is one NPDES sampling location which is located near the POTW discharge point. Further evaluation of base surface water quality could be included in the Installation Restoration Program but currently it is not included in Law's Scope of Work.
2.	Pg. 2-29, 3rd ¶, last sentence (Section 2.1.8.1)		A	Based on the information contained in ERM Final IR/FS Report, fish and benthic surveys of Silver Creek and its tributaries were conducted by Tippets, Abbett, McCarthy, and Stratton (TAMS) for joint civilian/military use (TAMS, 1988). Law will attempt to locate the referenced report and will revise the text to reflect your concerns.
3.	Pg. 2-35, Table 2-5		A	Table 2-5 will be amended.
4.	Pg. 2-79, 1st full ¶		E	In this section, Law has simply presented the information developed by ERM. We consider ERM's potentiometric data and hydrologic interpretation suspect for Site 3. New potentiometric data will have to be collected by Law for Sites 1 and 3 before we will comment on the validity of ERM's ground-water gradient interpretation.
5.	Pg. 2-79, 1st full ¶		A	As stated on Page 4-125 in ERM's Stage 1 RI/FS report, the hydraulic conductivity at Site 3 was determined from a slug test of Well 3-3 ($K = 2 \times 10^{-3}$ ft./min.)
6.	Pg. 2-81, Figure 2-26		A	Agree that the ground-water flow paths should intercept at right angles to the potentiometric lines. Figure 2-26 will be updated. Law will reevaluate the hydrogeologic interpretation for Sites 1 and 3 when we collect quality potentiometric data from the same time interval. The reason for the misplaced arrows is that one CADD file was overlayed onto another and then not updated.

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7.	Pg. 2-102, Figure 2-33		A	The arrow used to identify the tank location will be changed to look different from the arrow used to depict ground-water flow direction.
8.	Pg. 2-111, 1st complete ¶		A	The text will be updated to say southwest.
9.	Pg. 2-126, Figure 2-39		D	The Above Ground Storage Tank (Site 5) is located at considerable distance from surface water bodies, therefore, it is not likely that releases of fuels will directly impact surface water. Under scenario considered for this site, contaminants released from this tank might be spilled on the ground surface and impact local water bodies through entrainment in surface water run-off. Contaminants could also infiltrate through soils to ground water which in turn may discharge to local surface waters.
10.	Pg. 2-122, Table 2-31		A	Air volatilization is a secondary release mechanism for volatile contaminants released to surface soils. Air constitutes an exposure pathway through which volatile emissions and fugitive dusts may impact on human or environmental receptors. Therefore, volatile emissions and dust generation are secondary release mechanism but air is a primary exposure pathway. The text will be expanded in Section 2.3 to address your concerns.
11.	Pg. 2-150		A	Because background was not adequately established in the Stage 1 RI/FS report, constituents detected in concentrations above detection limits should be considered in the CSM. Table 2-31 and the text will be revised accordingly.
12.	Pg. 2-150, 1st complete ¶		A	The possible presence of DNAPL in ground water beneath these sites will be considered in the revised CSM.

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13.	Pg. 2-151, 2nd bullet (Sec. 2.3.2)		A	Based on the ERM Stage 1 RI/FS Report, approximately 13,000 gallons of JP-4 fuel were lost in a 1977 spill incident at tank 8550 on Site 5. The spill event involved a 120,000-gallon release. Approximately, 107,000 gallons were reportedly recovered from the dike area surrounding the tank. The discrepancies in the text of the work plan will be revised.
14.	Pg. 2-152, 2nd ¶		A	The text will be changed to reflect the current hydrogeologic conceptual model that is being used for preparation of this investigation. Note that saturated aquifer conditions occur at Scott AFB in near-surface alluvial and glacial deposits, and in underlying Paleozoic bedrock. Previous field investigations at Scott AFB produced insufficient data to provide for characterization and zonation of water bearing units in and around the base. Therefore, although well designations such as shallow, intermediate, and deep are used to describe the completed depths of monitoring wells on base, Law anticipates that the groundwater system at Scott AFB consists of a unconfined aquifer in the upper overburden units, perhaps becoming semi-confined in the underlying discontinuous glacial lenses and becoming a confined aquifer at some point within the bedrock. The saturated interval above bedrock is, at this time, classified as a single interconnected unconfined to semi-confined aquifer.
15.	Pg. 2-152, 3rd ¶		D	Law considers installation of double cased wells into bedrock unwarranted by current site data. Shallow intermediate and deep wells will be installed to monitor contamination in the unconsolidated zone.
16.	Pg. 2-153, 2nd ¶ (Section 2.3.3.2)		A	Pesticides will be added to the list of analytes in surface water and sediment samples to be collected from Mosquito Creek.

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17.	Pg. 2-154, 1st sentence (Section 2.3.3.2)		A	Current records indicate that Ash Creek, Mosquito Creek and Silver Creek are used for seasonal recreational fishing at the base and the vicinity. Law does not have any information as to whether significant fishing actually occurs along these creeks.
18.	Pg. 2-154, 2nd complete ¶ (Section 2.3.3.4)		A	Law appreciates your efforts in rephrasing the referenced paragraph and will include it in the revised work plan.
19.	Pg. 2-155, 2nd full ¶		A	Law agrees that an update and review of current water well usage downgradient of the base is a task which needs to be included in the Remedial Investigation.
20.	Pgs. 2-159 through 2-162, Table 2-32.		A	The section will be revised to consider a risk range of 1×10^{-4} to 1×10^{-6} .
21.	Table 2-33.		A	Law appreciates your consideration in providing us with the recent ARARs. These ARARs will be incorporated in the revised work plan.
22.	Pg. 2-164, Table 2-33		A	Stormwater Discharge regulations will be incorporated in the work plan according to your recommendations.
23.	Pg. 2-164, Table 2-33		A	National Ambient Air Quality Standards along with approved and promulgated State Implementation Plans for control of air emissions during remedial activities (40 CFR 52), will be incorporated in the work plan according to your recommendations.
24.	Pg. 2-166, Table 2-34		A	The Illinois Standards and Specifications for Soil and Sediment Control Act of 1987 will be included in the work plan.

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25.	Pg. 2-167, 4th full ¶		A	Table 2-9 identified the "deep" well 1-10D (completed at the base of the glacial overburden) at Site 1 as having exceeded MCLs for benzene, toluene, xylene, and 4,4'-DDT. All other exceedances of MCLs occurred in samples collected from wells designated as shallow. Note that all monitoring wells in the IRP program are in the overburden aquifer
26.	Pg. 2-174, Table 2-36		A	The text will be revised to avoid possible confusion. There is only one aquifer above bedrock. Proposed monitoring wells will be screened at different depths within this aquifer.
27.	Pg. 2-174, Table 2-36		D	There is only one aquifer envisioned above bedrock.
28.	Pg. 2-174, Table 2-36		A	There is thought to be only one aquifer above bedrock. No DNAPLs are suspected at Site 3.
29.	Pg. 2-174, Table 2-36		A	Law will confirm and expand on the ERM hydrologic investigation. ERM's hydrogeologic data is judged to be incomplete for Site 3. A pump test will be conducted at Site 1 and slug tests will be performed on selected monitoring wells.
30.	Pg. 2-175, Table 2-36		D	The contaminants released during the 1977 spill at Facility 8550 consisted of JP-4 fuel. Law will sample for the fuel in the vadose zone soils, shallow saturated zone soils, drainage channel sediments, drainage channel surface water and the ground water in the shallow portion of the overburden aquifer.
31.	Pg. 2-175, Table 2-36		D	Soil and ground water are known to have been impacted at Site 6, in addition to Sites 1 and 4. Remedial alternatives will be evaluated where results indicate unacceptable risk levels to be present.
32.	Pg. 2-175,		A	The data needs at Site 7 are also to better define the nature and extent of ground-water contamination. The text will be changed.

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33.	Pg. 2-177, 1st full ¶		A	According to the Phase I Records Search, page 4-21: The landfill was begun in the early 1940's, and was used for domestic refuse, hardfill and construction rubble, wastewater treatment plant sludge, and industrial wastes. The landfill was trench-and-fill operation, with trenches 8- to 10-feet deep. Over the period of use up to three or four layers of trench-and-fill operations were performed, giving an approximate 30- to 40-foot depth of fill material according to interviewee estimates.
34.	Pg. 2-178, 3rd and 4th bullet		A	Explanation. The text will be reworded to indicate that in addition to analysis for volatile compounds, surface and sediment samples will be analyzed for semi-volatile organics, pesticides PCBs, TRPH and metals. The list of chemical compounds to be analyzed in sediment and surface samples at Site 1 are presented in Table 3-10 of the work plan.
35.	Pg. 2-179, ¶ i & ii (Sec. 2.6.1)		A	Because of the lack of information on the degree of interconnection present in the overburden aquifer, it will be assumed that the aquifer represents a single interconnected unit until proven otherwise. Therefore, the "deep" wells will be considered as being completed in the lower portion of the shallow aquifer. (The text will be modified to reflect this.)
36.	Pg. 2-180, 2nd ¶		A	It is proposed that monitoring of ground-water levels at Site 1 be performed from March through May, which is the period of heaviest rainfall. This will allow Law to observe the potentiometric response during periods of infiltration. This data will assist Law in estimating the potential for discharge of ground water to Mosquito Creek in the vicinity of the landfill.
37.	Pg. 2-181, last ¶		A	All intrusive activities at landfill sites are potentially dangerous. Therefore, attempts will be made to identify the type of waste disposed in the landfill through research of historical data and interviews with base personnel.

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38.	Pg. 2-183, 1st complete ¶		A	<p>Explanation. There are no tests to quantify changes in a landfill's condition. Site inspection, review of historical data and professional judgment needs to be used to identify possible changes in the landfills potential to leach contamination.</p> <p>The surface water and sediments from Mosquito Creek and Silver Creek were sampled by ERM in 1988. The data obtained do not meet QA/QC requirements. Site data acquired by ERM is inadequate to evaluate contaminant release from this site. Therefore, proposed sampling of surface water and sediments is required to evaluate potential impact of leachate from the landfill on surface water quality and sediments of local creeks.</p>
39.	Pg. 2-183		A	<p>Surface water and sediments should be sampled at upgradient locations from the site to evaluate potential contamination from off-site and anthropogenic sources. Background samples will be analyzed for pesticides.</p>
40.	Pg. 2-148, 1st ¶		A	<p>Explanation. The surface of the landfill has been regraded since surface soil samples were collected by ERM. Accordingly, previously obtained data may not be representative of present site conditions. It will be necessary, therefore, to collect additional soil samples to evaluate the potential risks to base military personnel.</p>
41.	Pg. 2-184/185, (Sec. 2.6.2)		A	<p>No further action (NFA) documents have been submitted to IEPA for Sites 2 and 7. Law will respond to IEPA's comment on these sites when responses to the NFA document are provided. No changes to the existing plan are recommended at this stage of the process.</p>
42.	Pg. 2-187, 1st part. ¶, last sentence (Sec. 2.6.3)		A	<p>Our description of well screen placement in the cited passage has been clarified to read "Law therefore recommends installation of a second monitoring well with a screened interval straddling the water table to account for seasonal fluctuations."</p>

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43.	Pg. 2-187		A	Law is unclear as to whether EPA is recommending sampling newly derived sludges from the treatment plant or old sludges. If it is old sludges that is being referred to, it should be noted that the location of old sludge disposal is, at this time, uncertain. It has been theorized that a possible disposal site was located in the vicinity of IRP Site 3. Therefore, finding and sampling old sludges represents a task which will require further investigation prior to implementation.
44.	Pg. 2-188		A	The data are unreliable for this site due to the fact that DNAPL and dissolved phase petroleum contamination is suspected and the existing monitoring wells are screened below the static water level. Also the absence of any DNAPL monitoring points at this site represents a data gap.
45.	Pg. 2-189, 2nd & 3rd full ¶s, Pg. 2-190, 1st part. & 2nd full ¶s, 3rd & 4th sentences		A	Law will clarify in the text that a total of four new monitoring wells (three to be completed across the water table, and one "deep" well to be completed at the base of the overburden section) will be installed at Site 4.
46.	Pg. 2-190, 1st part. ¶ (Sec. 2.6.4)		E	Surface soil sampling was not recommended due to the presence of chat surrounding the burn pit. The 2 to 3 inches of rock covering the soil would make it unlikely that contaminants would be transferred to human receptors through direct contact. Also, the potential for inhalation of fugitive dust would be minimized by presence of the rock cover.
47.	Pg. 2-191, 1st full ¶ (Sec. 2.6.5)		D	Law is not stating that free product is not present in ground water at the site. Additional wells are planned for monitoring the water table. This, in addition to 30 hydropunch locations planned for this site, should provide more than adequate data for definition of JP-4 plumes resulting from the past spills at the facility.

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48.	Pg. 2-194, 1st complete ¶, 2nd to last sentence		A	Explanation. Remediation goals for cleanup of ground water will be based, most likely, on IEPA ARARs governing petroleum storage tanks. A determination on whether risk based cleanup standards for BTEX will be required will be made during the development of the Remedial Investigation.
49.	Pg. 2-196, second ¶ (Section 2.6.6)		A	A health and safety plan has been developed for the proposed investigations at each site. Air monitoring using a photoionization detector (PID) will be used during intrusive site activities for the protection of personnel working on site.
50.	Pg. 2-196, second ¶ (Section 2.6.6)		A	The modeling of gas emissions based on subsurface soil data will be included in the revised work plan.
51.	page 2-199, last bullet		A	Soils under Building 1680 will be covered with synthetic geomembrane sheets to mitigate potential damage and exposure to mercury vapors. In addition, all people working in the crawl space under this building will be required to wear a respirator or use air monitoring equipment.
52.	Pgs. 3-2 through 3-3		A	The PID will indicate the presence of VOC and some SVOC contamination. The PID is a very economical screening tool which provides real time data. Sample depths will be selected using the PID results. However, if visible contamination is present or for example, a pesticide odor is detected, the sample will be collected at this depth.
53.	Pg. 3-2, Table 3-1		D	This information will be provided with the Remedial Investigation/ Feasibility Study report which will be submitted after completion of the field investigation.

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54.	Pg. 3-2, Table 3-1		D	<p>Law recommends that well screens possess a minimum length of ten feet. This is due to the high clay percentage in this aquifer which reduces ground-water infiltration and necessitates a longer intake section. This should provide the well with sufficient recharge capacity for development and ground-water sampling.</p> <p>Law recommends a 20- to 30-foot screen length to minimize the vertical component of ground-water flow. Vertical flow will reduce the accuracy of the transmissivity values developed from the test. To reduce inter-zone contamination, the well may be installed and developed as close in time as possible to the start of pump testing, and could then be abandoned shortly after testing. However, an alternative solution would be to move the recovery well location to a position outside the radius of influence from both of the landfill cells. Note that hydropunch sampling prior to installation of the recovery well will indicate if contamination in the lower portion of the aquifer is present.</p>
55.	Pg. 3-2, Table 3-1		A	The sentence will be reworded according to your recommendation.
56.	Pg. 3-2, Table 3-1		D	This comment is invalid since the required text is already present.
57.	Pg. 3-8, Table 3-5		A	Soil boring SB3-4 should be changed in Table 3-3 to MW3-4. Figure 2-3 in the SAP is correct.
58.	Pg. 3-8, Table 3-5		D	Hydropunch locations are spotted outside of the known source area in order to avoid electrical utilities and buried pipelines. The proposed hydropunch locations will provide a tight data collection grid immediately downgradient of the source area.
59.	Pg. 3-8, Table 3-5		E	Law does not recommend surface sampling of the soil beneath the gravel within the berm surrounding the POL tanks.

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COMMENT RESPONSES

SUBJECT: WORK PLAN COMMENTS

PROJECT: SCOTT AIR FORCE BASE PAGE: 13 OF 19

DISCIPLINE: Risk Assessment, Hydrogeology COMMENTOR: USEPA, Region V DATE: 6-4-93

DISCIPLINE: Risk Assessment, Hydrogeology RESPONDENT: B. Breeding,
B. Glijer, J. Beaver DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
60.	Pg. 3-9, Table 3-6		E	Prior to final selection of the pump test site, Law will sample ground water utilizing hydropunch to determine if contamination exists at specified depths in the aquifer. If contamination is not found above MCLs then alternate pump test locations will be considered. Immediate abandonment of the pump test well will be performed if the recovery well is not likely to be used as a part of an eventual remediation system. In order to maintain horizontal flow toward the well and minimize turbulence, a 30-foot screen was originally recommended. This was due to the fact that vertical ground-water flow would result in head loss which is not accounted for in analytical methods used for pump test reduction. Law recommends that a screen of up to 20-feet be called for in the work plans. The text will be changed to state that a screen of up to 20-feet be installed for the recovery well.
61.	Pg. 3-11, Table 3-7		A	Table 2-36 will be revised to indicate that surface water and sediments will be collected from the drainage ditch, with one near the Silver Creek discharge point.
62.	Pg. 3-12, Table 3-8		D	Law believes that institution of engineering controls and monitoring for mercury vapor are appropriate field tasks for Site 8. Appropriate respiratory protection will be required by Law employees and recommendations for workers entering the crawl space will be made based on air monitoring results. The puncture resistant membrane should eliminate potential exposure of maintenance workers to mercury contaminated soils.
63.	Pg. 3-13, Table 3-9		A	The approximate locations of monitoring wells and surface soil samples will be shown on site-specific figures. The approximate depth at which wells will be installed and soil sampled will be included in Table 3-9 of the revised work plan.
64.	Pg. 3-13, Table 3-9		A	A figure indicating approximate locations where background soil and ground water samples are to be collected will be include in the revised SAP. Soil background samples will be collected at the same

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SUBJECT: WORK PLAN COMMENTS

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DISCIPLINE: Risk Assessment, Hydrogeology

COMMENTOR: USEPA, Region V

DATE: 6-4-93

DISCIPLINE: Risk Assessment, Hydrogeology

RESPONDENT: B. Breeding,
B. Glijer, J. Beaver

DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
65.	Pgs. 3-14 through 3-21, Table 3-10		A	depth as proposed for soil samples. The general location of background sampling has been set as north of the air field and in Silver Creek, upstream of the base. The depth of proposed collection of soil samples will be included in the revised Table 3-10 of the work plan.
66.	Pg. 3-16		E	Three semi-volatiles were detected at FPTA No. 1 in ERM's Stage I RI/FS; however, the results were below the method detection limits. Also, two of the compounds were phthalates which are common field contaminants (one of the phthalates also appeared in the QA/QC blank at a similar level). Lead was detected at FPTA No.1. The levels of lead present in the soil samples were similar to the concentrations observed in the background samples collected from other areas of the base. Concentrations were also within the range commonly detected in soils from similar geologic environments.
67.	Pg. 3-17		D	Soil samples collected from the monitoring well borings are being analyzed for TPH. Soil samples collected by Target are being analyzed for volatile organics only since it is a screening tool. Semi-volatile organics along with volatile organics, TPH, and total metals are being collected from soil samples at MW-6.
68.	Pg. 3-21		E	An Explosion Ordinance Disposal Area is located at Landfill 1 and explosives will be analyzed.
69.	Pgs. 3-27 & 3-28		A	Table 3-11C will be deleted from plan.

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COMMENT RESPONSES

SUBJECT: WORK PLAN COMMENTS

PROJECT: SCOTT AIR FORCE BASE

PAGE: 15 OF 19

DISCIPLINE: Risk Assessment, Hydrogeology

COMMENTOR: USEPA, Region V

DATE: 6-4-93

DISCIPLINE: Risk Assessment, Hydrogeology

RESPONDENT: B. Breeding,
B. Glijer, J. Beaver

DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
70.	Pg. 3-31		A	The SAP has been corrected to indicate a depth of four feet.
71.	Pg. 3-31 2nd full ¶		D	The "deep part of the aquifer" refers to the zone immediately above bedrock in the overburden aquifer. The risk of inter-aquifer contamination will be reduced by immediate abandonment (by grouting to surface) of all hydropunch borings upon completion of sample collection. Grouting of hydropunch borings will be performed inside of hollow stem augers, while the augers are being removed from the boring.
72.	Pg. 3-31, last part. ¶		A	The proposed depths for the twelve shallow wells range from twenty to thirty feet. Proposed depths for the five deep wells ranges from seventy to eighty feet. (This information is included in the second and fourth sentences of paragraph two on page 3-32 of the Work Plan.)
73.	Pg. 3-32, 1st part. ¶		A	No DNAPL contamination is currently suspected immediately upgradient of the landfill.
74.	Pg. 3-32, last ¶		A	Law concurs that we will use a 10-foot screen length for this well. The reasoning behind the use of longer screens was that if ground water is held under hydrostatic pressure within a semi-confined shallow aquifer then: 1) the water levels may rise significantly after installation of the well and 2) the location of any potential floating LNAPL phase would be on top of the capillary fringe not the top of the level to which ground water would rise in the well.
75.	Pg. 3-34, 1st part. ¶		A	The soil sample collected from the zone exhibiting the highest PID reading will be collected regardless of whether it occurs above or within the saturated zone. The sample collected from the deepest part of the boring will, of necessity, be collected from within the saturated zone. This is because the borings will be used for installing monitoring wells which will extend below the water table.

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DISCIPLINE: Risk Assessment, Hydrogeology

RESPONDENT: B. Breeding,
B. Glijer, J. Beaver

DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
76.	Pg. 3-36, 1st part ¶		D	Law does not feel that the information gained from drilling soil borings and/or test pit excavation justifies the potential health hazards posed to the field crew, base personnel, and nearby civilian populations which could result from the release of an acutely hazardous substance during drilling or excavation.
77.	Pg. 3-37, 1st full ¶		A	Observation well spacing will be established through preliminary pretest analytical calculations. If additional piezometers are required they will be installed.
78.	Pg. 3-38, 1st full ¶		A	The Hantush (1960) method will be employed for analyzing pump test results should indications of semi-confined aquifer conditions be encountered. (The text has been modified to reflect this change.)
79.	Pg. 3-38, 2nd full ¶		A	The quality of "draw-down data" will be evaluated by comparing the electronically-measured water levels with manual water level measurements taken on a daily basis before, during, and after the pump test. The statement in the text refers to raw data which is identified to be either a result of an electronic or mechanical malfunction of the transducers or data logger.
80.	Pg. 3-40, last ¶		A	Organic DNAPLs are not suspected contaminants for Site 3. Metals contained in wastewater treatment plant sludges generally are low in mobility as long as the pH of the subsurface soils and infiltrating rainfall is not significantly acidic. It is most likely that metals which do get transported in solution from the near surface soils would precipitate out as they move through the vadose zone. At this time Law does not recommend a deep well to look for heavy metals at the base of the aquifer.
81.	Pg. 3-42, Figure 3-4 (of WP); Pg. 2-17, Figure 2-3 (of SAP)		A	The figure will be changed.

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DISCIPLINE: Risk Assessment, Hydrogeology COMMENTOR: USEPA, Region V DATE: 6-4-93

DISCIPLINE: Risk Assessment, Hydrogeology RESPONDENT: B. Breeding,
B. Glijer, J. Beaver DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
82.	Pg. 3-48, 1st full ¶		A	Bower and Rice will be used if unconfined conditions are encountered; Cooper et al., will be used if the aquifer is judged to be better represented by a confined solution. A pump test was recommended for Site 1 due to the need to more fully characterize the hydrogeologic properties beneath this landfill constructed just above or at times within the shallow aquifer. The complexity of the site justified the additional cost associated with the aquifer test. The BX Gas Station (IRP Site 6) has BTEX contamination in ground water at ppm levels. Law has proposed to handle this site as an Immediate Response Action (IRA) with aquifer hydraulic conductivity and air permeability testing as one of the tasks involved in the preliminary technology assessment phase.
83.	Pg. 3-50, Figure 3-6		D	See response to comment 58.
84.	Pg. 3-51, Figure 3-7		A	MW5-6 will be installed so that the screen intercepts the water table. MW5-3 was installed with the well screen approximately ten feet below the water table, thus inhibiting the well's ability to monitor for floating free-phase constituents, which are the predominant constituents of concern. Additionally, the proposed location of MW5-6 is downgradient of the spill site, and is therefore a strategic monitoring location.
85.	Pg. 3-53, 1st full ¶			See response to comments 58 and 59.
86.	Pg. 3-55, last ¶		E	The recovery well proposed in these RI/FS work plans is not intended to remediate ground-water contamination, it is part of the investigations into the hydrogeologic properties of IRP Site 1. Evaluation of remedial alternatives (including no action) will occur during the Feasibility Study. The selected remedial alternative will be identified in a Decision Document. If remediation is required, design and construction contracts will be prepared by the Air Force.

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DISCIPLINE: Risk Assessment, Hydrogeology RESPONDENT: B. Breeding,
B. Glijer, J. Beaver DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
87.	Pg. 3-57, 2nd full ¶		A	We agree that it is unlikely that the recovery well will require a continuous pumping rate as high as 50 GPM. Law's recommendation of installing a 6-inch diameter well allows for the use of an appropriate-sized pump if a more permeable section is encountered, and a higher than expected flow rate is required to induce a sufficient cone of depression.
88.	Pg. 3-57, 3rd full ¶		D	Comparison of the atmospherically corrected draw down data to the classic Thies curve provides valuable information on the effects of aquifer boundary conditions. There is no recovery analysis specifically for unconfined aquifers. Note that only the results from the most appropriate solution technique will be presented in the RI/FS.
89.	Pg. 3-58, 3rd full ¶, 2nd to last ¶		A	Shallow hydropunch borings <u>will</u> penetrate to the top of water, at which point a ground-water sample will be collected. Deep borings will penetrate to the top of bedrock, at which point a ground-water sample will be collected. Again the overburden aquifer is anticipated to extend from top of bedrock to the top of the saturated zone.
90.	Pg. 3-58, 4th full ¶		A	A map view of the site will be incorporated as Figure 3-9.
91.	Pg. 3-60, 1st ¶		D	The final selection of the background locations will be made after Law has had a chance to visit the area immediately north of the base. Law will select the location which appears to represent an area unimpacted by industrial activities. Pesticides, herbicides, and fertilizers are anticipated to be constituents present at the background locations. Law recognizes that the soil type may have a significant effect on the analytical results particularly for background metals concentrations. The variable nature of glacial deposits will likely result in

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DISCIPLINE: Risk Assessment, Hydrogeology COMMENTOR: USEPA, Region V DATE: 6-4-93

DISCIPLINE: Risk Assessment, Hydrogeology RESPONDENT: B. Breeding,
B. Glijer, J. Beaver DATE: 9-30-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
				background samples representing sands, silts, and clays. The chemical composition of each lithology will need to be considered when evaluating whether IRP site metals concentrations exceed background levels.
92.	Pg. 3-61, 1st complete ¶, 2nd sentence (Section 3.2.1.9)		A	The sentence will be reworded according to your recommendations.
93.	Pg. 3-70, 8th bullet (Section 3.6)		A	The bullet will be corrected as per your recommendation.
94.	Pg. 3-73, second paragraph (Section 3.6)		A	The EPA's Health Effects Assessment Summary Tables will be added as a reference source for RfDs and CSFs.
95.	Pg. 3-74, first incomplete ¶ (Section 3.6)			The text will be revised to indicate that quantitative risk estimates will be developed for all chemicals of concern. Comparisons of exposure concentrations with ARARs and other decision criteria (such as the 1×10^{-7} cancer risk criteria and the hazard index criteria) will then be performed in order to determine the need for remedial actions.
96.	Pg. 3-75		A	Region V Scope of Work for Biological Assessment dated April 30, 1991 will be referenced in the Ecological Risk Assessment Section. Law would be most appreciative if you could provide us with a copy of this document.

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COMMENT RESPONSES

SUBJECT: SCOTT AFB STAGE 2 RI/FS SAP

PROJECT: SCOTT AIR FORCE BASE 11-2597-0114 PAGE: 1 OF 5

DISCIPLINE: Chemistry COMMENTOR: USEPA Region V DATE: 6-4-93

DISCIPLINE: Chemistry RESPONDENT: J. Siegrist DATE: 9-22-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
1.	Pg. 1-8		E	The values cited in the SAP are correct. The text in the Work Plans has been corrected.
2.	Pg. 1-19		A	Text will be added to include field GC analysis to be Analytical Level II.
3.	Pg. 1-20		A	1) The field activity is explained in Section 2.1.5 of the SAP and also in Target's SOP, found in Appendix E. 2) Text will be added.
4.	Sec. 1.2.3		E	These tables are found in the FSP - Table 2-17 and 2-18.
5.	Sec. 1.3		A	1) Text added to Figure 1-2 2) Text added.
6.	Sec. 1.4		E	Section 1.2.2 of the SAP describes how the data will be used. A discussion on ambient condition blanks will be added to the text.
7.	Pg. 1-35		E	A more detailed description of trip blanks and rinsate blanks can be found in Section 2.2.4 of the FSP. This section includes frequency of collection, preparation procedures, and how the data will be used.
8.	Pg. 1-35		E	1) Field duplicate frequency is covered in Section 2.2.4 of the FSP. 2) As stated in the SAP, one MS/MSD sample will be collected for every 20 samples and the chemist will designate these samples in the field. MS/MSD samples will be collected for organic as well as inorganic samples. This is to ensure precision can be measured for each metal. Three aliquots will be collected for each matrix and parameter to ensure adequate sample volume for the laboratory.
9.	Table 1-3		A	1) Text will be added. 2) Text will added to the table.

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COMMENT RESPONSES

SUBJECT: SCOTT AFB STAGE 2 RI/FS SAP

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DISCIPLINE: Chemistry

COMMENTOR: USEPA Region V

DATE: 6-4-93

DISCIPLINE: Chemistry

RESPONDENT: J. Siegrist

DATE: 9-22-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
10.	Pg. 1-43		E	Information on Target's Chain-of-Custody procedures can be found in their SOP in Appendix E.
11.	Pg. 1-47		E	AFCEE does not require a final evidence file, this is a CLP requirement only.
12.	Pg. 1-51		E	This SAP was written following the outline described in the "Handbook to Support the Installation Restoration Program (IRP) Statements of Work" as required by AFCEE. In this outline, calibration procedures for laboratory instruments are found in Section 1.8.3.
13.	Pg. 1-54		A	Text will be added.
14.	Pg. 1-66		A	SOPs will be provided for TPH (CAL-DHS), HPLC analysis of explosives, and TCLP. They will be located in Appendix F. SOPs for VOCs by field GC can be found in Appendix E. Information on pesticide/PCB analysis will also be added to the text.
15.	Pg. 1-68		A	VOC and semi-VOCs information will be added to the text.
16.	Pg. 1-76		A	Text will be added.
17.	Pg. 1-77		A	Text will be added.
18.	Pg. 1-78		A	Text will be added.
19.	Pg. 1-78		A	Text will be added.
20.	Pg. 1-82		A	Analytical methods will be referenced in this section.
21.	Pg. 1-87		A	Text will be added.
22.	Pg. 1-95		A	Text will be added.

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COMMENT RESPONSES

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DISCIPLINE: Chemistry COMMENTOR: USEPA Region V DATE: 6-4-93

DISCIPLINE: Chemistry RESPONDENT: J. Siegrist DATE: 9-22-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
23.	Pg. 2-9		A	Text added. (Ground surface level)
24.	Pg. 2-12		E	An immediate response action using engineering controls will be implemented in Building 1680. A puncture resistant geosynthetic membrane will cover the crawl space instead of the plastic sheeting. This membrane will eliminate soil exposure to maintenance workers such as plumbers who must service the pipes beneath the building. Regular air monitoring is also recommended at the site.
25.	Pg. 2-14, Figure 2-1a		A	The north arrow on this figure will be corrected.
26.	Pg. 2-15, Figure 2-1b		A	<p>It is unclear which landfill cell is being discussed when referring to the "south, southwest, or southeast boundaries". The proposed locations appear to provide uniform coverage. If there is a specific location that EPA would like sampled please advise us.</p> <p>Note that the symbol showing the "boring locations" are hand auger borings to collect surface soils only. The reason for duplicating ERM's surface soil sampling is that the landfill has recently been regraded and military training exercises are occasionally conducted at the site.</p> <p>Sediment and surface water sample locations have been selected to assess potential contaminant leaching from ground water to Mosquito Creek. Note that in addition to the surface water and sediment samples shown on this figure, there will be one sample collected, under the background program, from the confluence of Mosquito and Silver Creeks.</p>
27.	Pg. 2-20/21 Figure 7		A	This figure will be added.
28.	Pg. 2-37, 1st part. ¶		E	Surging of wells during filter pack installation is standard AFCEE protocol, as outlined in the IRP Handbook (p. 2-10, Section g(1)).

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DISCIPLINE: Chemistry COMMENTOR: USEPA Region V DATE: 6-4-93

DISCIPLINE: Chemistry RESPONDENT: J. Siegrist DATE: 9-22-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
				This procedure will be performed in order to compact and stabilize the filter pack. The filter pack above the ground water interface will be tremied in place to avoid bridging. If an external water source will be introduced into the wells (bentonite hydration, grout preparation, decon, etc..) it will be sampled and sent off for analysis.
29.	Pg. 2-47, 2nd ¶ & Pg. 2-14, Figure 2-1a		A	The final selected location of the recovery well should take into consideration 1) variations in hydrogeologic characteristics between the IRP site and pump test location, 2) cost of treating extracted water, 3) the potential for pulling contamination into an area not previously contaminated. Law recommends that either we select a location with documented groundwater contamination and then treat the extracted ground water or move clearly outside the radius of influence of any potential contaminated zone.
30.	Pg. 2-50		A	Text will be added.
31.	Pg. 2-54		NA	Dissolved metals are not being collected at Scott AFB, only total metals. Therefore, samples will not be filtered.
32.	Pgs. 2-65 through 2-72		A	1) The TCLP analysis will only be performed if the back calculated total results exceed the TCLP regulatory limits. Therefore, at this point we cannot determine which sites will require this analysis. 2) Text added. 3) Text added.
33.	Pg. 2-81		E	As stated in the last paragraph of Section 2.2.2., MS/MSD samples will have no prefix. They will have the same sample identification number with either the MS or MSD suffix attached.
34.	Pg. 2-87		E	The frequencies for collecting or preparing replicate, field duplicates and trip blank samples correspond to those required by AFCEE.

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SUBJECT: SCOTT AFB STAGE 2 RI/FS SAP

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DISCIPLINE: Chemistry COMMENTOR: USEPA Region V DATE: 6-4-93

DISCIPLINE: Chemistry RESPONDENT: J. Siegrist DATE: 9-22-93

COMMENT No.	LOCATION REFERRAL (ORIGINAL)	LOCATION REFERRAL (MODIFIED)	*	RESPONSE
35.	Pg. 2-89		E	Calibration of all field instruments are recorded in the field notebook, calibration forms are not required by AFCEE.
36.	Appendix E		A	Detailed SOPs have been added.
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SCOTT AFB COMMENTS

WWES has prepared the following comments concerning the March 1993 reports titled "Second Draft Work Plan Stage II (WP), Remedial Investigation, Feasibility Study, Treatability Study" as well as the "Second Draft Sampling and Analysis Plan (SAP), Remedial Investigation, Feasibility Study, Treatability Study" completed for Scott Air Force Base (Scott AFB), Illinois, as prepared by Law Environmental, Inc. (Law) under the Air Force Installation Restoration Program (IRP).

On January 28, 1993, WWES prepared and submitted to the U.S. EPA comments concerning the April 1992 report titled "Final Technical Report Volume I Findings and Recommendations" and the "Sampling and Analysis Plan" of the "Installation Restoration Program Stage 1 Remedial Investigation/Feasibility Study" for Scott AFB as prepared by Environmental Resources Management, Inc. (ERM).

GENERAL COMMENTS

Much of the information contained within Law WP Stage II documents has been taken directly from the IRP Stage I RI/FS Report prepared by ERM and will not be commented on a second time. Only the Law's revisions, amendments, additional investigations and additional recommendations will be technically reviewed by WWES. In general, however the WP appears to address the primary concerns raised in the review of the Stage I documents by ERM. A few deficiencies do remain:

- A site-wide summary with a figure of the known hydrogeologic features and ground water flow directions would be very helpful.
- In general, previous work has not adequately addressed the issue of Non-Aqueous Phase Liquids (NAPLs). Law's proposed work will better define these parameters, but their strategy does not appear consistent for all of the sites.
- The utility of a Hydropunch will provide helpful real-time data during the investigations, but the contaminants to be analyzed have not been specified. Moreover, the collection of risk assessment quality data has not been established.
- Law reported the presence of three aquifers on the Scott AFB, a shallow, an intermediate and a deep aquifer. Consistency in the referencing of these aquifers would be helpful to the reader. It is assumed that only the shallow aquifer is being sampled, yet, only once in the report, is this assumption substantiated. It should be made clear to the reader that the shallow aquifer is

the only one being studied and any deep wells referenced in the report are located at the bottom of the shallow aquifer.

- Downgradient wells installed in the intermediate and deep aquifers are recommended to determine whether they have been impacted by site activities.
- In several instances, definition of relevant abbreviations including data qualifiers are omitted from tables. Any abbreviations or qualifiers used in the tables should be defined in the footer.
- The conceptual site model summary presented in Table 2-31 does not indicate how the background values were calculated and whether or not they are appropriate or adequate (with regard to soil type and number of samples collected). We presume this was taken from the SI Report. Please indicate if this is the case.
- Table 2-32 presents a list of potential remedial alternatives for the Scott AFB site and Table 2-33 presents a list of potential federal ARARs for the Scott AFB site. The information presented in these tables should be combined so that the potential ARARs associated with a particular remedial alternative are presented together. The revised table should be expanded to include a description of the potential remedial alternative which may be impacted by the ARAR as well as a brief description of the statutory requirements for the specific ARAR cited. For example, under the 40 CFR 264 citation, the table should be expanded to explain that removal of contaminated wastes from areas of contamination may require cleanup to levels established under RCRA closure requirements. The same format should be used for Table 2-34 so as to identify the potential State of Illinois ARARs associated with each remedial alternative.

Overall the SAP appears substantially complete. Tables 2-1 to 2-8, which define the field tasks to be performed followed by a brief statement of the rationale for each task, were particularly helpful.

COMMENTS ON THE WORK PLAN

SECTION 2.0 ENVIRONMENTAL SETTING

1. Page 2-23, 3rd complete paragraph, last sentence (Section 2.1.4.2)

The ERM report (1992) is referenced in this sentence. It is noted that "the previous investigation found that base water quality is generally within the levels

required for "General Use" waters, although minor variances from the permitted concentration were noted at several locations." No mention is made with regard to what the variances were nor how the variances were handled. Additional discussion at this point is needed to indicate whether these variances need further investigation.

2. Page 2-29, third paragraph, last sentence (Section 2.1.8.1)

The last sentence alludes to a historical benthic survey. Who completed these surveys, when they were performed, and where they were performed (e.g., up river to the Scott AFB in Silver Creek)?

3. Page 2-35, Table 2-5, History of IRP Sites

In the description of the waste disposed of in Site 1 (landfill), no mention is made regarding disposal of waste "sludge" as described previously in the report. This information should be added.

4. Page 2-79, 1st incomplete paragraph

The hydraulic gradient across Site 3 had been estimated by Law as being 0.005. Has the water level data from Well 3-1 been included in this estimate, in spite of the qualification mentioned earlier in the paragraph? If so, during which measuring event did the estimated gradient exist?

5. Page 2-79, 1st complete paragraph

Please identify the monitoring wells at Site 3 in which slug tests were conducted. Which measuring event was the horizontal flow rate based on?

6. Page 2-81, Figure 2-26, Ground Water Elevation Contour Map - Site 3

The ground water divide illustrated on this figure should parallel the site's proposed equi-potential lines of ground water flow. In addition, this ground water divide appears to disagree with the divide indicated on Figure 2-16, page 2-48. Please clarify.

7. Page 2-111, 1st complete paragraph

The first sentence of this paragraph indicates that the sludge lagoon was formerly located southeast of the POL tanks, but Figure 2-36 on page 2-112 indicates that

the site boundaries for the sludge lagoon are southwest of the POL tanks. Please clarify.

8. Page 2-126, Figure 2-39. Conceptual Site Model Base-wide

The flow chart indicates that a spill will only directly impact soil. The free product releases associated with an above ground storage tank could directly impact surface water.

9. Page 2-129, Table 2-031, Conceptual Site Model Summary

What are the exposed receptors/routes of exposure for the secondary migration pathway of air volatilization? None are presented on the table.

10. Page 2-150, first incomplete paragraph, last sentence (Section 2.3.1)

It is agreed that the quantity of the background data available for analysis is limited and the recommendation that additional samples be collected and analyzed for the purpose of establishing background is warranted. In the next paragraph, last sentence, the report points out to the reader that only the contaminants present at concentrations exceeding the inadequately established background were included in Table 2-31. Until appropriate background can be established for the site, all of the detected contaminants should be included in Table 2-31.

11. Page 2-150, 1st complete paragraph

The last sentence of this paragraph indicates that Law's CSM lists only those contaminants detected above background levels. With regard to VOCs, many of the LNAPLs may not have been detected by previous studies because none of 32 monitoring wells included in this investigation appear to intercept the water table. We suggest that these LNAPLs may exist on sites that have not yet detected such contaminants. Such omissions should be considered during the development of this first component of the CSM, that is identification of site contaminants.

12. Page 2-151, second bullet, (Section 2.3.2)

The quantity of fuel spilled at this site is reported to be 20,000 gallons on page 2-91 and 13,000 gallons on page 2-151. Page 2-91 reports that approximately 7,000 gallons of the fuel was recovered, yet 13,000 gallons of the fuel could not be accounted for. Page 2-151 reports that of the 13,000 gallons accidentally released, 107,000 gallons were recovered. What is the correct number of gallons released?

13. Page 2-152, second paragraph, (Section 2.3.3.1)

In the initial ground water discussion, three ground water zones are identified - - surficial, intermediate and deep which are present in the alluvial deposits, glacial deposits and bedrock. For consistency throughout the remainder of the report, the ground water should be referenced in the same manner.

14. Page 2-152, third paragraph, (Section 2.3.3.1)

The third sentence of this paragraph suggests that vertical movement of contaminants from surficial to deep aquifers may be restricted OR it may exist. It is not apparent what part of the investigation, if any, is addressing the concern of vertical movement of contaminants.

15. Page 2-153, second paragraph, (Section 2.3.3.2)

Due to the nature of possible contamination present in some areas of the Scott AFB (e.g., pesticides) and the possibility of contamination due to agricultural activities surrounding the base (i.e., pesticide use in agriculture), surface water and sediment samples collected from upstream should be analyzed for contaminants of concern.

16. Page 2-154, first sentence, (Section 2.3.3.2)

Human populations also potentially may be exposed to contaminants via ingestion of fish caught from a contaminated surface water body. It should be noted if significant recreational fishing is expected in these creeks.

17. Page 2-154, 2nd complete paragraph (Section 2.3.3.4)

In the third sentence, the report states that VOC's were not detected in the surface soils, yet in the next sentence the report states that it is reasonable to assume that volatilization may occur from these same soils. It may be better to replace the third and fourth sentences with the following:

"The previous investigation performed by ERM did not detect VOC's in any of the surface soil samples collected. Nevertheless, due to the limited information available regarding the presence of VOC's in surface, and the types of contamination known to be present at different sites on the Scott AFB, it is possible that volatilization of VOC's may occur."

18. Page 2-155, second complete paragraph, (Section 2.3.4.1)

It is not clear from earlier parts of the report (pg. 2-17) what ground water in the vicinity (within a one-mile radius) of the base is being used as a source of potable water or other domestic or agricultural uses. Currently, the base and surrounding domestic water needs are met from a municipal water supply, though it is unclear where the municipal water supply gets its water.

19. Pages 2-159 through 2-162, Table 2-32. Preliminary Remedial Action Alternative

The preliminary remedial action objectives lists the cumulative cancer risk objective to be 1×10^{-4} . U.S. EPA considers a risk range of 1×10^{-4} to 1×10^{-6} when evaluating whether potential carcinogenic risks are acceptable at a site. Selection of a number within this range as the final remedial action objective would be made by risk managers and should not be made at this point in the site investigation. This section should be revised to say the cumulative cancer risk range of 1×10^{-4} to 1×10^{-6} is considered as the preliminary remedial action objective at this site.

20. Page 2-164, Table 2-33. Federal ARARs, Division of Solid and Hazardous Waste

1) In addition to listing ARARs applicable to land disposal of hazardous wastes, ARARs, including 40 CFR 241 and 257, which apply to land disposal of non-hazardous solid wastes should be included in the table under this heading.

2) 49 CFR 100-199 should also be cited under this section as a potential ARAR under Standards Applicable to Transporters of Hazardous Wastes.

3) The Toxic Substances Control Act (40 CFR 761.60) may be a potential ARAR if polychlorinated biphenyl impacted soils are detected at the site.

21. Page 2-164, Table 2-33. Federal ARARs, Division of Water

Under the Stormwater Discharge Requirements, Parts 123, 124 of 40 CFR and Section 402(P) of the Clean Water Act should also be included as potential ARARs if excavation activities at the site will result in potential storm water runoff.

22. 2-164, Table 2-33. Federal ARARs, Division of Air

Under the National Ambient Air Quality Standards, 40 CFR 51 should also be included as an ARAR since this rule outlines requirements for preparation of management plans to control air emissions (e.g., fugitive dust emissions) during remedial activities. In addition, 40 CFR 52, which covers the approval and promulgation of State Implementation Plans for control of air emissions during remedial activities, should also be included as a potential ARAR.

23. Page 2-166, Table 2-34. State of Illinois ARARs, Illinois Hazardous Waste Management Regulations

The Illinois Standards and Specifications for Soil and Sediment Control Act of 1987 should be included as a potential state ARAR.

24. Page 2-167, 4th complete paragraph, (Section 2.5.1.2)

In the second sentence, ground water is referenced. It is not clear which aquifer is being discussed, or whether all of the aquifers are classified as Class I aquifers.

25. Page 2-174, Table 2-36. Identification of Data Needs, Site 1, Landfill 1, 1st Data Need

The wording of the first data need is confusion: "to define the extent of downgradient ground water contamination" and "to delineate the contaminant plume" are similar statements.

Will the intermediate and deep aquifers be sampled and analyzed to confirm that they are not currently impacted?

26. Page 2-174, Table 2-36. Identification of Data Needs, Site 1, Landfill 1, 2nd Data Need

In the earlier text it is mentioned that the surficial and intermediate aquifers may be linked. Does the work plan address the nature of the possible communication between aquifers?

27. Page 2-174, Table 2-36. Identification of Data Needs, Site 3, Fire Protection Training Area No. 2, 1st Data Need

Will the intermediate and deep aquifers be sampled and analyzed to confirm that they are not currently impacted?

- 28. Page 2-174, Table 2-36. Identification of Data Needs, Site 3, FPTA #2, 1st Data Need**

Why must the hydraulic conductivity parameters be determined by Law? (ERM calculated these values in earlier studies.) If the parameters truly need to be determined a second time, why not also determine these parameters for Site 1 and 2?

- 29. Page 2-174, Table 2-36. Identification of Data Needs, Site 5, Facility 8550 Spill Site, Data Need 1**

Will the intermediate and deep aquifers be sampled and analyzed to confirm that they are not currently impacted?

- 30. Page 2-175, Table 2-36. Identification of Data Needs, Site 6, 4th Data Need**

Why must remedial alternatives be evaluated for Site 6 but not for the other sites?

- 31. Page 2-175, Table 2-36. Identification of Data Needs, Site 7, 1st Data Need**

Why are NAPL's only explicitly listed as a data need for Site 7?

- 32. Page 2-177, 1st complete paragraph**

Law indicates that the landfill depth is approximately 30 to 40 feet. However, ERM's 1992 report indicates only a 10-foot fill depth. Which previous investigation indicates a 30 to 40-foot fill depth?

- 33. Page 2-178, third and fourth bullet, (Section 2.6.1)**

The Work Plan seems to have focused on the volatile site contaminants. The investigation of at least the landfill, sediment and surface water should also include heavy metals which may be significant in terms of dermal exposure and ingestion.

- 34. Page 2-179, paragraphs (i) and (ii), (Section 2.6.1)**

The aquifer being investigated needs to be stated since three aquifers are present at the site.

35. Page 2-180, 2nd complete paragraph

Why was a three-month period chosen to continuously monitor ground water levels? Which three months are proposed for the monitoring program? After becoming familiar with the fluctuating ground water levels after three months, are continued daily, weekly, monthly ground water level measures proposed for these 5 wells until a full year has elapsed? Are additional measures proposed following significant rainfall events?

36. Page 2-181, last paragraph

A soil gas survey is "intrusive" if proposed within the boundaries of the landfill. Is this also considered "potentially dangerous?" Additionally, we believe that investigations of the landfill itself may be necessary to fill in the data gaps left by inadequate previous investigations, historical documentation and the gathering of information via personal interviews.

37. Page 2-183, 1st complete paragraph

It is true that five years have passed since the surface water and sediment of Mosquito Creek have been sampled, but the suggested site changes appear intuitive in this paragraph. Please include quantified changes to better rationalize the proposed sampling.

38. Page 2-183, first full paragraph, (Section 2.6.1)

Surface water quality data needs are discussed in this paragraph. Due to the agricultural uses of the surrounding lands, background samples of sediment should be analyzed for pesticides. Analytical results could then be used to calculate background concentrations of these compounds.

39. Page 2-184, 1st paragraph

Although only recreational exposure was found to be unacceptable by the ERM 1992 report, is it not possible to determine the exposure limits for military activities as well? Why is the analysis of 20 additional soil samples necessary?

40. Page 2-184/185, (Section 2.6.2)

Although VOCs are recognized as possible subsurface soil and ground water contaminants, adequate characterization of LNAPLs has not been completed. We

recommend that additional monitoring wells be constructed to intercept the water table.

41. Page 2-187, first incomplete paragraph, last sentence, (Section 2.6.3)

The installation of a monitoring well above the water table is recommended for the identification of LNAPL-type contaminants. Please explain why a monitoring well above the water table, rather than straddling the top of the water table, is recommended.

42. Page 2-187, 1st paragraph

Law has suggested that metals contamination of Site 3 ground water may be due to waste water treatment plant sludges. If this is a possibility, then we recommend that the sludges, themselves, be sampled for metals in addition to installing a monitoring well between the site and the plant.

43. Page 2-188, second paragraph, fifth sentence, (Section 2.6.4)

Please state why data from the existing wells is considered unreliable.

44. Page 2-189, 2nd and 3rd complete paragraph and Page 2-190, 1st incomplete paragraph and second full paragraph, third and fourth sentence (Section 2.6.4)

Based on these paragraphs WWES understands that a total of seven new monitoring wells are proposed by Law. WWES concurs with the rationale for the first three, but insufficient rationale is provided for the four proposed on page 2-190.

The report should state in which aquifer the "one deep well" will be placed.

45. Page 2-190, 1st incomplete paragraph, (Section 2.6.4)

It is not clear whether surface soil samples will be collected from this site, and if not, why.

46. Page 2-191, first complete paragraph, (Section 2.6.5)

Based on the ERM 1992 report, "poorly sorted sand, silt and clay" exist in the uppermost shallow soils (depth of approximately ten feet). Predominantly clay soils underlie these shallow soils. Moreover, the water table apparently exists

above these clay soils. Based on this ERM information, free product may exist in the vicinity of Site 5. However, no water table wells appear to exist; so, adequate assessment of such free product is not yet possible.

47. Page 2-194, 1st incomplete paragraph, second to last sentence, (Section 2.6.6)

What criteria will be used to determine when the site is remediated? Will health based clean-up remediation goals be established for BTEX at this site?

48. Page 2-196, 1st & 2nd complete paragraphs

Alternative measures are possible to control the site's background volatile emissions, for example, temporary closing of the BX gas station. Regardless of the background levels, air monitoring of volatile emission for health and safety purposes should be taken during an investigation of Site 6.

49. Page 2-196, second paragraph, (Section 2.6.6)

If the soils are not heavily impacted, then the argument presented here may be appropriate. However, heavily impacted soils could increase the risk substantially to anyone who is present on the site. Granted, actual air sampling would not be appropriate due to the ongoing activities at the station, but it would be possible to model the emissions from the subsurface soils to the above air space without any interference from contributions from gasoline distribution activities.

50. Page 2-199, last bullet

The installation of plastic sheeting in the crawl space is not an adequate "engineering control." Puncturing of the plastic is probable during maintenance in the crawl space; so, the institution of ERM's recommended health and safety measures may be necessary.

SECTION 3.0 REMEDIAL INVESTIGATION/FEASIBILITY STUDY TASKS

51. Pages 3-2 through 3-3, General Comment

PID readings will indicate VOC and some SVOC contamination presence, but will not indicate the presence of elevated metals. If a sample contains visible contamination but has a low (or no) PID reading, will it be sampled?

Also, will all collected samples be submitted for analysis? This is not always indicated on the tables.

52. Page 3-2, Table 3-1. Field Tasks for Remedial Investigation - Site 1, 1st Field Task

A soil gas survey is recommended by Law for Site 1, but a figure illustrating the location and distance between each survey point has not been provided. Please provide such a figure for technical review.

53. Page 3-2, Table 3-1. Field Tasks for Remedial Investigation - Site 1, 2nd and 3rd Field Tasks

Ten-foot screens are recommended by WWES for the water table wells. Five-foot screens are recommended for the deep wells set above bedrock. WWES is concerned about the use of a 30-foot well screen for the recovery well. Because the nature and extent of contamination is not well defined at greater depths, the use of a 30-foot well screen may connect contaminated zones with non-contaminated zones.

54. Page 3-2, Table 3-1. Field Tasks for Remedial Investigation - Site 1, 7th Rationale

Reword Rationale 7 to read: "evaluate health risk posed by surface soil exposure during army training activities."

55. Page 3-2, Table 3-1. Field Tasks for Remedial Investigation - Site 1, 8th Rationale

Insert "and sediment" after "surface water".

56. Page 3-5, Table 3-3, Field Tasks for Remedial Investigation - Site 3, 4th Field Task

Although two soil borings are proposed, only one soil boring is illustrated in the SAP on Figure 2-3 (page 2-17). Please clarify.

57. Page 3-8, Table 3-5. Field Tasks for Remedial Investigation - Site 5, 1st Field Task and 1st Rationale

Although 30 Hydropunch locations are recommended by Law to aid in the location of monitoring wells and to delineate the extent of contamination, no proposed Hydropunch locations appear to exist in the source area on Figure 2-5, page 2-19

of SAP. Such an omission limits delineation of the vertical extent of contamination. Please explain.

58. Page 3-8, Table 3-5. Field Tasks for Remedial Investigation - Site 5, 8th Field Task and 8th Rationale

1) Although 10 soil samples have been recommended by Law to determine the magnitude and extent of surface soil contamination, no sample locations appear to be proposed in the source areas adjacent to the tank, see Figure 2-6, page 2-20 of SAP. Please explain.

2) Surface soil samples are collected and analyzed to determine dermal and dust inhalation exposure.

59. Page 3-9, Table 3-6. Field Tasks for Remedial Investigation - Site 6, 4th Field Task

If the water table exists approximately 6 feet bls at Site 6 and Law intends to extend a screen to approximately 35 feet bls, then a 30-foot recovery well screen is being recommended. WWES is concerned about the use of a 30-foot well screen for the recovery well. Since this well is proposed to be installed within the contaminant plume, care must be taken to not draw contaminants downward into zones that are not currently impacted.

60. Page 3-11, Table 3-7. Field Tasks for Remedial Investigation - Site 7, 3rd Field Task

Although surface water and sediment samples are proposed by Law as a field task, such sampling and analysis was not considered a data need, see Table 2-36 on page 2-175. Please clarify.

61. Page 3-12, Table 3-8. Field Tasks for Remedial Investigation - Site 8

WWES recommends that Health and Safety controls, originally proposed by ERM, also be implemented for Site 8.

62. Page 3-13, Table 3-9. Field Tasks for Remedial Investigation, Background Location, Field Tasks 1, 3, and 6

Please provide approximate location depths for the proposed well installations and surface soil sampling.

63. Page 3-13, Table 3-9. Field Tasks for Remedial Investigation - Background Location, 2nd and 6th Rational

Please include in the SAP a figure depicting the background locations. Are these sampling points of similar soil type?

64. Page 3-14 through 3-21, Table 3-10. Sampling Plan Detail - Soil and Sediment

The addition of a column entitled "Sample Depth", where appropriate, is recommended.

Could explosives or other ordnance-related chemicals be present at any of the sites? A discussion of whether soils should be analyzed for explosive constituents is warranted?

65. Page 3-16, Table 3-10. Sampling Plan Detail - Soil and Sediment

Why are the samples collected from FPTA No. 1 not being analyzed for semi-volatile organic compounds? SVOC's may be present. Also, did any of the fuel or other flammables used in the fire exercises contain lead?

66. Page 3-17 through 3-19, Table 3-10. Sampling Plan Detail - Soil and Sediment, Facility 1965

Why are no TPH analyses proposed for the soil and sediment samples? Why are semivolatile organic analyses only proposed for soil samples collected from MW6?

67. Page 3-21, Table 3-10, General Comment

A discussion of whether soils should be analyzed for explosive constituents (particularly at the landfill) is warranted.

68. Pages 3-27 and 3-28, Tables 3-11B and 3-11C Sampling Plan Detail -Aqueous

There is no apparent difference between these two tables.

69. Page 3-31, 1st complete paragraph

Although the expected depth for the survey is indicated as four feet, page 2-24 of the SAP indicates a sampling depth of two to ten feet, please clarify. Where will the survey points be located? Please include these locations on a figure.

70. Page 3-31, 2nd complete paragraph

How is the "deep part of the aquifer" determined? Which aquifer? Will Hydropunch samples be collected at periodic intervals (i.e. 5-foot intervals)? How will the Hydropunch investigation avoid drawing down contamination. Why install a recovery well where no contaminants are found? Pumping of such a well may draw contamination down into zones not previously contaminated.

71. Page 3-31, last incomplete paragraph

What are the proposed depths for the 12 shallow and 5 deep monitoring wells?

72. Page 3-32, 1st incomplete paragraph

Shallow well, MW1-23, has been proposed to identify constituents within the shallow part of the surficial aquifer, but no such well has been proposed for the deeper part of the aquifer. Please explain.

73. Page 3-32, last paragraph

WWES recommends that 10-foot well screens be used to intercept the water table. If the hollow-stem auger method is proposed for nearly all well installations, how will contamination of ground water beneath contaminant sources be avoided?

74. Page 3-34, 1st incomplete paragraph, (Section 3.2.1.1)

Specify whether the soil samples collected from "the zone of highest PID reading" and the "deepest part of the boring" will be collected from the saturated or unsaturated zone.

75. Page 3-36, 1st incomplete paragraph

Indirect methods are referenced as indicating whether or not ground water is in contact with fill material. This question has already been determined by ERM, see MW1-7 on Figure 4-2 of page 4-16. However, WWES recommends that direct methods be used to document the depth of fill material within the landfill.

76. Page 3-37, 1st incomplete paragraph

Figure 3-1 shows only one monitoring well within 250 feet of the recovery well, this does not constitute a network of monitoring wells capable of providing

drawdown data during a pump test of the recovery well. What will be the distance between the recovery well and MW1-15?

77. Page 3-38, 1st complete paragraph

The proposed pump test data evaluation will assume confined and unconfined aquifer conditions. Can we safely make this assumption when previous work at the site has suggest semi-confining or leaky confined conditions?

78. Page 3-38, 2nd complete paragraph

What conditions/parameters will used by Law to determine invalid pump test data?

79. Page 3-40, last paragraph

The proposed shallow downgradient monitoring well will not provide information regarding the possible presence of DNAPLs and heavy metals in the ground water.

80. Page 3-42, Figure 3-4. Proposed Sampling Locations - Site 3 & Page 2-17 of the SAP, Figure 2-3. Proposed Sampling Locations - Site 3.

The proposed soil boring SB3-3 should be renamed SB3-4 on both figures.

81. Page 3-48, 1st complete paragraph

The Bouwer and Rice method will be utilized by Law to reduce the aquifer test data. This method is appropriate for an unconfined aquifer. Why are aquifer tests proposed for Site 4 while pump tests have been proposed for other sites?

82. Page 3-50, Figure 3-6. Proposed Hydropunch Sampling Locations - Site 5

Why are no Hydropunch sampling points located within the bermed area for the two tanks?

83. Page 3-51, Figure 3-7. Proposed Sampling Locations - Site 5

MW5-6 is proposed by Law to be located adjacent to existing well, MW5-3. Please explain this proposal.

84. Page 3-53, 1st complete paragraph

Why are no surface soil samples proposed to be collected within the tank berm area?

85. Page 3-55, last paragraph

A recovery well should only be installed after the vertical extent of contamination has been determined. Premature placement of this well may lead to ineffective removal of contaminants.

86. Page 3-57, 2nd complete paragraph

Continuous pumping at a rate of 50 gpm is unlikely. Section 7.1.3.2 and Table 2-2 suggest that probably pump rates are between 0 and 10 gpm.

87. Page 3-57, 3rd complete paragraph

Theis and Neuman calculations apply to different aquifer conditions and should not be used as a "check" on each other.

88. Page 3-58, 3rd complete paragraph, second to the last sentence (Section 3.2.1.7)

What are the approximate depths of the 'shallow' and 'deep' aquifer? Why are no additional monitoring well installations proposed?

89. Page 3-60, first paragraph, (Section 3.2.1.9)

Are the proposed wells located upgradient to the Scott AFB? Which aquifers will the wells be screened? A map indicating the probable locations of the monitoring wells and soil samples to be used for background would be beneficial.

Please emphasize that the background soil samples, both sub-surface and surface, need to be collected from the same soil type as the foreground samples. WWES recommends that U.S. EPA guidance regarding selection and number of adequate background samples be followed.

90. Page 3-61, 1st complete paragraph, second sentence (Section 3.2.1.9)

Delete "normal" from sentence and replace with unimpacted or background.

91. Page 3-70, 8th bullet, (Section 3.5.1)

Insert "detection" before "limits" to clarify the meaning of the task.

92. Page 3-73, second paragraph, (Section 3.6)

U.S. EPA's Health Effects Assessment Summary Tables (HEAST) should be listed as a reference source for RfD's and SF's.

93. Page 3-74, first incomplete paragraph, (Section 3.6)

The work plan states that if ARARs are available for all identified contaminants, then a quantitative risk assessment will not be performed. This approach, however, will likely not account for the potential cumulative health effects from exposure to multiple chemicals and, therefore may not be appropriate.

In addition, any quantitative risk assessment should be conducted not only according to U.S. EPA 1989, but also according to other relevant risk assessment guidance, and supplemental guidance, documents published since 1989.

94. Page 3-75, whole page (Section 3.7 - Ecological Risk Assessment)

Guidance for conducting this evaluation should also reference the Region V Scope of Work for Ecological Assessment (April 30, 1991).

The sampling plan, as indicated in previous sections, does not include the collection of plants, fish or animals for aquatic toxicity tests or for the analyses of chemical uptake. The ecological risk assessment should include as part of its conclusions, recommendations on whether any such sampling or testing is necessary based on the results of this assessment.

COMMENTS ON THE SAMPLING AND ANALYSIS PLAN (SAP)

SECTION 2.0 FIELD SAMPLING PLAN (FSP)

1. Page 2-9, Table 2-6. Field Tasks for Remedial Investigation - Site 6, 6th Field Task

What is gsl?

2. Page 2-12, Table 2-8. Field Tasks for Remedial Investigation - Site 8, 1st Field Task

Covering the surface soils in the crawl space with plastic sheeting is not a remedial investigation activity. Since there is presently a building over the crawl space, downward leaching is not a concern. If mercury vapor emissions were to occur, the plastic sheeting would not reduce that potential. Rather, the vapors would be directed and discharged along the edges of the plastic sheet where people are more likely to be present. In summary, this proposed activity accomplishes nothing in the way of remedial investigation, or exposure reduction. In fact, the people who would install the plastic sheeting are the likely candidates for exposure.

3. Page 2-14, Figure

North Landfill Cell and South Landfill Cell are shown east and west from one another. Either the cells are misnamed or the north arrow on the map is pointed the wrong direction.

4. Page 2-17, Figure 2-1a. Proposed Monitoring Well Locations - Site 1


There are no surface soil samples or soil borings proposed near the south, southwest, or southeast boundaries. The number of surface soil samples and soil borings appears adequate, but the proposed locations would largely duplicate earlier work.

5. Page 2-37, 1st incomplete paragraph

It is discussed that the well will be surged during installation of the sand filter pack. This is a good idea for well development, however, it is unclear whether ground water from the well will be used in the surging (i.e. withdrawing and re-pumping into the well) or if outside water will be introduced. Introduction of outside water should be avoided since that would reduce the chance of obtaining a representative ground water sample.

6. Page 2-47, 2nd paragraph and Page 2-14, Figure 2-1a. Proposed Monitoring Well Locations

If the primary purpose of well MW1-15R is for a pump test, it may be advisable to locate the well upgradient from the landfill to allow for the possibility that the 100,000 gallons of water to be pumped would be clean enough so that the expense of special disposal methods would not be required. If well MW1-15R is also



intended as a recovery well in the future, then its exact location should be determined based on the analytical results from the surrounding wells.

7. Pages 2-50 through 2-80, Section 2.2.1. Environmental Sampling

No comment.

8. Pages 2-89 through 2-106, Section 2.3. Field Measurements

Calibration procedures of the various field instruments have been described, yet no field calibration forms have been presented.

